

Apriori Algorithm for Recommender Systems

Coordinator: Roxana Mafteiu-Scai

Team: Team 1

Team Members: Adrian Tuns, Iulia Hurloi,
Paul Pop, Vittoria Piatti

Theme

Implementing the Apriori algorithm from scratch and apply it in a movie recommender system.



Data set

- ★ 8896 lines
- ★ List of users favorite movies
- ★ Text file

```
Dogs;Searching;Roma;Us;Deadpool 2;Bird Box;Aquaman  
Won't You Be My Neighbor?;Isle of Dogs;Roma;Bohemian Rhapsody  
Avengers: Infinity War - Part I;Deadpool 2  
Avengers: Infinity War - Part I;Isle of Dogs  
Green Book;Once Upon a Time in Hollywood;Joker  
Deadpool 2;Green Book;Bohemian Rhapsody;Isle of Dogs;Searching;Aquaman;Spider-Man: Into the Spider-Verse;A Star Is Born  
Ocean's 8;Incredibles 2;Avengers: Infinity War - Part I;Avengers: Infinity War - Part II;Spider-Man: Into the Spider-Verse  
The Cloverfield Paradox;Tomb Raider;Pacific Rim: Uprising;Red Sparrow
```

Implementation



```
    SavedState[] newArray(int size) {  
        return new SavedState[size];  
    }  
}
```

```
public FragmentTabHost(Context context) {  
    // Note that we call through to the version that takes a AttributeSet  
    // because the simple Context construct can result in a wrong type  
    super(context, null);  
    initFragmentTabHost(context, null);  
}
```

```
public FragmentTabHost(Context context, AttributeSet attrs) {  
    super(context, attrs);  
    initFragmentTabHost(context, attrs);  
}
```

Main Functions

Start data mining

Get length itemsets

Movie recommendation



Graphic User Interface

Movie Recommender

[Start Mining](#)

What will you watch today? Tell us a movie that you like, and we'll suggest you something nice

You can get a movie suggestion based on the desired length of the itemset or based on a title

Length of the Itemset to visualize

[Confirm](#)

Select a movie from the list

[Clear](#)[Confirm](#)

A Quiet Place
A Star Is Born
Alita: Battle Angel
Annihilation
Ant-Man and the Wasp
Aquaman
Avengers: Infinity War - Part I
Avengers: Infinity War - Part II
Bad Times at the El Royale
Bird Box

Your results:

[Clear Results](#)[Generate new suggestions](#)

Results



Terminal Output View

```
Welcome to movie recommendation!  
Here is the list of movies from our database: 'A Quiet Place', 'A Star Is Born', 'Alita: Battle Angel', 'Annihilation', 'Ant-Man  
and the Wasp', 'Bandersnatch', 'Bohemian Rhapsody', 'Captain Marvel', 'Crazy Rich Asians', 'Deadpool 2', 'Eighth Grade', 'Fantastic Beasts and  
Where to Find Them', 'Joker', 'Jurassic World: Fallen Kingdom', 'Love, Simon', 'Mission: Impossible - Fallout', 'Ocean's 8', 'Once Upon a Time in  
Hollywood', 'Far from Home', 'Spider-Man: Into the Spider-Verse', 'The Ballad of Buster Scruggs', 'The Cloverfield Paradox', 'Tomb Raider',  
If you want to exit the program, input "quit".
```

```
Input some movies that you enjoy, separating them by a ";":
```

```
Incredibles 2 ; Deadpool 2
```

```
The movie recommendation result: 'Avengers: Infinity War - Part I'
```

```
Should we try giving a new recommendation? Answer with: "yes" or "no"
```

```
yes
```

```
The movie recommendation result: 'Spider-Man: Into the Spider-Verse'
```

```
Should we try giving a new recommendation? Answer with: "yes" or "no"
```

```
yes
```

```
The movie recommendation result: 'Avengers: Infinity War - Part II'
```

```
Should we try giving a new recommendation? Answer with: "yes" or "no"
```

```
yes
```

```
The movie recommendation result: 'Ant-Man and the Wasp'
```

```
Should we try giving a new recommendation? Answer with: "yes" or "no"
```

```
yes
```

```
The movie recommendation result: 'Captain Marvel'
```

```
Should we try giving a new recommendation? Answer with: "yes" or "no"
```

```
yes
```

```
The movie recommendation result: 'Spider-Man: Far from Home'
```

```
Should we try giving a new recommendation? Answer with: "yes" or "no"
```

```
yes
```

```
We are sorry, but no recommendation could be found for your input.
```

Movie Recommender

[Start Mining](#)

What will you watch today? Tell us a movie that you like, and we'll suggest you something nice

You can get a movie suggestion based on the desired length of the itemset or based on a title

Length of the Itemset to visualize [Confirm](#)

[Clear](#) [Confirm](#)

A Quiet Place
A Star Is Born
Alita: Battle Angel
Annihilation
Ant-Man and the Wasp
Aquaman
Avengers: Infinity War - Part I
Avengers: Infinity War - Part II
Bad Times at the El Royale
Bird Box

Your results:

The itemsets of length 2 are the following:
[A Quiet Place;Hereditary]
[Green Book;Spider-Man: Into the Spider-Verse]
[Deadpool 2;A Quiet Place]
[Deadpool 2;Ant-Man and the Wasp]
[Ant-Man and the Wasp;Avengers: Infinity War - Part I]
[Annihilation;A Quiet Place]
[Incredibles 2;Ant-Man and the Wasp]
[Mission: Impossible - Fallout;Avengers: Infinity War - I]
[Deadpool 2;Mission: Impossible - Fallout]

[Clear Results](#) [Generate new suggestions](#)

Itemset Output View

Movie Recommender

[Start Mining](#)

What will you watch today? Tell us a movie that you like, and we'll suggest you something nice

You can get a movie suggestion based on the desired length of the itemset or based on a title

Length of the Itemset to visualize [Confirm](#)

[Clear](#) [Confirm](#)

A Quiet Place

A Star Is Born

Alita: Battle Angel

Annihilation

Ant-Man and the Wasp

Aquaman

Avengers: Infinity War - Part I

Avengers: Infinity War - Part II

Bad Times at the El Royale

Bird Box

^

▼

{Deadpool 2} {Incredibles 2}

Your results:

Recommendation: 'Avengers: Infinity War - Part I'

Should we try giving a new recommendation?

Recommendation: 'Spider-Man: Into the Spider-Verse'

Should we try giving a new recommendation?

Recommendation: 'Avengers: Infinity War - Part II'

Should we try giving a new recommendation?

Recommendation: 'Ant-Man and the Wasp'

Should we try giving a new recommendation?

Recommendation: 'Captain Marvel'

Should we try giving a new recommendation?

<

>

[Clear Results](#)

[Generate new suggestions](#)

Two Movies Input Results

One Movie Input With Negative Result

Movie Recommender

[Start Mining](#)

What will you watch today? Tell us a movie that you like, and we'll suggest you something nice

You can get a movie suggestion based on the desired length of the itemset or based on a title

Length of the Itemset to visualize

[Confirm](#)[Clear](#)[Confirm](#)

{A Quiet Place}

Your results:

A Quiet Place

A Star Is Born

Alita: Battle Angel

Annihilation

Ant-Man and the Wasp

Aquaman

Avengers: Infinity War - Part I

Avengers: Infinity War - Part II

Bad Times at the El Royale

Bird Box

No recommendation could be found.

[Clear Results](#)[Generate new suggestions](#)

Evaluation of performance

- for running the apriori algorithm, together with the process of saving to files: 21.25297236442566 s
- for computing the association rules and saving them into a file: 0.3769972324371338 s



Thank you for your attention!